

IN THE CLAIMS:

Please cancel claims 9, 11, 13, 15 and 17 without prejudice. Please amend claims 4, 10, 12, 14 and 16, and add new claims 18 and 19 as follows.

These claims will replace all prior versions of claims in the present application.

Listing of Claims:

Claims 1-3 (canceled)

4. (Currently Amended) A parallel divided flow fluid supply apparatus, comprising:

- (a) a pressure regulator having an upstream side and a downstream side;
- (b) a plurality of parallel flow passages disposed downstream of the pressure regulator, wherein a single flow of fluid from the pressure regulator is branched into the parallel flow passages;
- (c) a plurality of flow control valves disposed in the flow passages; and
- (d) a plurality of pressure flow control systems for controlling of the flow rate, one controller installed on each flow passage between two of the flow control valves disposed upstream and downstream of the controller respectively, wherein each pressure flow control system comprises:
 - (i) an orifice formed downstream of the control system and upstream of the downstream flow control valve for discharging fluid from the flow passage;
 - (ii) a control valve installed upstream of the orifice and downstream of the upstream flow control valve of the control system for controlling the flow rate of the fluid;
 - (iii) a pressure detector disposed between the orifice and the control valve for detecting the pressure P_1 between the control valve and the orifice;

(iv) a calculation control circuit, wherein with a pressure on an upstream side of the orifice set to be twice or more higher than a pressure on a downstream side of the orifice, the instantaneous flow rate Q_c is calculated as $Q_c = KP_1$, where K is a constant, from the pressure P_1 on the upstream side of the orifice detected by the pressure detector, and a difference between an instantaneous flow rate Q_c and a preset flow rate Q_s is outputted as control signal Q_y ; and

(v) a drive connecting the control valve and the calculation control circuit for receiving the control signal from the calculation control circuit and for sending the control signal to the control valve causing the control valve to operate to bring the control signal Q_y to zero, wherein

the plurality of pressure flow control systems operate to correct transient mutual pressure changes in the plurality of flow passages, thereby maintaining steady fluid flow.

Claims 5-9 (canceled).

10. (Currently Amended) A parallel divided flow fluid supply apparatus, comprising:

- (a) a pressure regulator having an upstream side and a downstream side;
- (b) a plurality of parallel flow passages disposed downstream of the pressure regulator, wherein a single flow of fluid from the pressure regulator is branched into the parallel flow passages, wherein the plurality of parallel flow passages includes a first flow passage disposed in parallel with a second flow passage;
- (c) a plurality of flow control valves disposed in the flow passages; and

(d) a plurality of pressure flow control systems for controlling of the flow rate, one controller installed on each flow passage between two of the flow control valves disposed upstream and downstream of the controller respectively, wherein each pressure flow control system comprises:

(i) an orifice formed downstream of the control system and upstream of the downstream flow control valve for discharging fluid from the flow passage;

(ii) a control valve installed upstream of the orifice and downstream of the upstream flow control valve of the control system for controlling the flow rate of the fluid;

(iii) a pressure detector disposed between the orifice and the control valve for detecting the pressure P_1 between the control valve and the orifice;

(iv) a calculation control circuit, wherein with a pressure on an upstream side of the orifice set to be twice or more higher than a pressure on a downstream side of the orifice, the instantaneous flow rate Q_c is calculated as $Q_c = KP_1$, where K is a constant, from the pressure P_1 on the upstream side of the orifice detected by the pressure detector, and a difference between an instantaneous flow rate Q_c and a preset flow rate Q_s is outputted as control signal Q_y ; and

(v) a drive connecting the control valve and the calculation control circuit for receiving the control signal from the calculation control circuit and for sending the control signal to the control valve causing the control valve to operate to bring the control signal Q_y to zero, wherein

the pressure flow control system installed on the first flow passage between two flow control valves operates to correct transient pressure changes in the first flow passage, thereby maintaining steady fluid flow in the first flow passage.

11. (Canceled)

12. (Currently Amended) A parallel divided flow fluid supply apparatus as recited in claim 104, wherein the pressure flow control system installed on the second flow passage between two flow control valves operates to correct transient pressure changes in the second flow passage, thereby maintaining steady fluid flow in the second flow passage.

13. (Canceled)

14. (Currently Amended) A parallel divided flow fluid supply apparatus, comprising:

- (a) a pressure regulator having an upstream side and a downstream side;
- (b) a first flow passage and a second flow passage disposed in parallel with each other and downstream of the pressure regulator, wherein a single flow of fluid from the pressure regulator is branched into the parallel flow passages;
- (c) a plurality of flow control valves disposed in the flow passages; and
- (d) a plurality of pressure flow control systems for controlling of the flow rate, one controller installed on each flow passage between two of the flow control valves disposed upstream and downstream of the controller respectively, wherein each pressure flow control system comprises:
 - (i) an orifice formed downstream of the control system and upstream of the downstream flow control valve for discharging fluid from the flow passage;
 - (ii) a control valve installed upstream of the orifice and downstream of the upstream flow control valve of the control system for controlling the flow rate of the fluid;

(iii) a pressure detector disposed between the orifice and the control valve for detecting the pressure P_1 between the control valve and the orifice;

(iv) a calculation control circuit, wherein with a pressure on an upstream side of the orifice set to be twice or more higher than a pressure on a downstream side of the orifice, the instantaneous flow rate Q_c is calculated as $Q_c = KP_1$, where K is a constant, from the pressure P_1 on the upstream side of the orifice detected by the pressure detector, and a difference between an instantaneous flow rate Q_c and a preset flow rate Q_s is outputted as control signal Q_y ; and

(v) a drive connecting the control valve and the calculation control circuit for receiving the control signal from the calculation control circuit and for sending the control signal to the control valve causing the control valve to operate to bring the control signal Q_y to zero, wherein

the pressure flow control system installed on the first flow passage between two flow control valves operates to correct transient pressure changes in the first flow passage, thereby maintaining steady fluid flow in the first flow passage.

15. (Canceled)

16. (Currently Amended) A parallel divided flow fluid supply apparatus as recited in claim 14~~5~~, wherein the pressure flow control system installed on the second flow passage between two flow control valves operates to correct transient pressure changes in the second flow passage, thereby maintaining steady fluid flow in the second flow passage.

17. (Canceled)

18. (NEW) A parallel divided flow fluid supply apparatus, comprising:
- (a) a pressure regulator having an upstream side and a downstream side;
 - (b) a plurality of parallel flow passages disposed downstream of the pressure regulator, wherein a single flow of fluid from the pressure regulator is branched into the parallel flow passages, wherein the plurality of parallel flow passages includes a first flow passage disposed in parallel with a second flow passage;
 - (c) a plurality of flow control valves disposed in the flow passages; and
 - (d) a plurality of pressure flow control systems for controlling of the flow rate, one controller installed on each flow passage between two of the flow control valves disposed upstream and downstream of the controller respectively, wherein each pressure flow control system comprises:
 - (i) an orifice formed downstream of the control system and upstream of the downstream flow control valve for discharging fluid from the flow passage;
 - (ii) a control valve installed upstream of the orifice and downstream of the upstream flow control valve of the control system for controlling the flow rate of the fluid;
 - (iii) a pressure detector disposed between the orifice and the control valve for detecting the pressure P_1 between the control valve and the orifice;
 - (iv) a calculation control circuit, wherein with a pressure on an upstream side of the orifice set to be twice or more higher than a pressure on a downstream side of the orifice, the instantaneous flow rate Q_c is calculated as $Q_c = KP_1$, where K is a constant, from the pressure P_1 on the upstream side of the orifice detected by the pressure detector, and a difference between an instantaneous flow rate Q_c and a preset flow rate Q_s is outputted as control signal Q_y ; and

(v) a drive connecting the control valve and the calculation control circuit for receiving the control signal from the calculation control circuit and for sending the control signal to the control valve causing the control valve to operate to bring the control signal Qy to zero, wherein

the pressure flow control system installed on the first flow passage between two flow control valves and the pressure flow control system installed on the second flow passage between two flow control valves operate to correct transient mutual pressure changes in the first flow passage and the second flow passage, thereby maintaining steady fluid flow in the first flow passage and the second flow passage.

19. (NEW) A parallel divided flow fluid supply apparatus, comprising:

- (a) a pressure regulator having an upstream side and a downstream side;
- (b) a first flow passage and a second flow passage disposed in parallel with each other and downstream of the pressure regulator, wherein a single flow of fluid from the pressure regulator is branched into the parallel flow passages;
- (c) a plurality of flow control valves disposed in the flow passages; and
- (d) a plurality of pressure flow control systems for controlling of the flow rate, one controller installed on each flow passage between two of the flow control valves disposed upstream and downstream of the controller respectively, wherein each pressure flow control system comprises:
 - (i) an orifice formed downstream of the control system and upstream of the downstream flow control valve for discharging fluid from the flow passage;
 - (ii) a control valve installed upstream of the orifice and downstream of the upstream flow control valve of the control system for controlling the flow rate of the fluid;

(iii) a pressure detector disposed between the orifice and the control valve for detecting the pressure P_1 between the control valve and the orifice;

(iv) a calculation control circuit, wherein with a pressure on an upstream side of the orifice set to be twice or more higher than a pressure on a downstream side of the orifice, the instantaneous flow rate Q_c is calculated as $Q_c = KP_1$, where K is a constant, from the pressure P_1 on the upstream side of the orifice detected by the pressure detector, and a difference between an instantaneous flow rate Q_c and a preset flow rate Q_s is outputted as control signal Q_y ; and

(v) a drive connecting the control valve and the calculation control circuit for receiving the control signal from the calculation control circuit and for sending the control signal to the control valve causing the control valve to operate to bring the control signal Q_y to zero, wherein

the pressure flow control system installed on the first flow passage between two flow control valves and the pressure flow control system installed on the second flow passage between two flow control valves operate to correct transient mutual pressure changes in the first flow passage and the second flow passage, thereby maintaining steady fluid flow in the first flow passage and the second flow passage.